NOTES.

THE Council of the British Medical Association are prepared to receive applications for one of the three Research Scholarships which is vacant, of the value of £150 per annum, tenable for one year, and subject to renewal by the Council for another year. Applications should be sent to the General Secretary on or before Saturday, October 10, stating the particulars of the intended research, qualifications, and work done.

FOLLOWING the usual custom, the winter session was commenced on Thursday last, in many of the medical schools in London and the provinces, by the delivery of addresses to the students. At Middlesex Hospital, Dr. W. Essex Wynter alluded to the rapid multiplication of books in modern times, and to the tendency that existed to go to them for information which should be gained at first hand, by direct observation. He described ideas gained from mere verbal accounts as artificial and spurious, and suggested that books should be used to complete and coordinate knowledge previously obtained by practical work. Prof. Sidney Martin inspired the students at University College Medical School with the spirit of investigation by giving a sketch of the advantages which medicine has obtained from the study of bacteriology. He pointed out that development of the experimental method has greatly aided the progress of medical science, and has been the means of improving the treatment of disease. It cannot be too strongly stated that the more that is known of the prime causes of disease, the more is it likely that measures will be discovered to prevent or counteract them. Mr. Morton Smale, at St. Mary's Hospital, dealt largely with quack medicines; and Mr. W. Adams Frost, at St. George's Hospital, discoursed chiefly upon medicine as a career. In the course of his address he referred to the appointment of the Royal Commission on vaccination, and said that, to people knowing the facts, it seemed about as reasonable to appoint a Commission to inquire into the truth of the law of gravitation. The introductory address at Westminster Hospital was given by Dr. Wills, who took for his subject medical practice and practitioners as depicted in the literature of the last two centuries. Mr. Boyce Barrow discoursed upon some of the endowments of the human body, at the London School of Medicine for Women; Sir Henry Littlejohn addressed the students at Sheffield Medical School, on the advantages of a provincial medical school; while Mr. Victor Horsley urged upon the students at the Leeds Medical School the fundamental importance of chemistry in medicine work in all its stages, and discussed matters of medical education, ethics, and politics. Mr. Jonathan Hutchinson delivered the introductory address at Owens College, Manchester, where he pleaded for a wide scope in medical education, and urged the reformation of the examinational system. These and many more were the points dwelt upon at the various medical schools; and if the students pay regard to but a tithe of the advice given them, a high standard of professional ethics will be secured, and future practitioners will abundantly add to the knowledge of the causes of disease and the means of prevention.

WE regret to record the death of Mr. W. C. Winlock, known for his contributions to astronomy. Mr. Winlock was assistant in charge of the office of the Smithsonian Institution. The death is also announced of Dr. J. P. E. Liesgang, a voluminous writer on photographic matters, and the founder of the *Photographische Archiv*; and of Dr. J. A. Moloney, who took a prominent part in the Stairs expedition to Katanga.

LORD SELBORNE took the chair at a meeting, held on Tuesday, to discuss the establishment of an International Submarine Telegraph Memorial. It is proposed to connect the memorial especially with the names of Mr. Cyrus Field, Sir John Pender, and Sir James Anderson. An executive committee was appointed to consider the form which the memorial shall take.

THE South African Museum has recently received a fine mounted specimen of the white or square-mouthed Rhinoceros (*Rhinoceros simus*) which was shot in the Mazoc district of Mashonaland, in June last year, by Mr. A. Eyre. The skin and skeleton were purchased by Mr. C. J. Rhodes, and, after having been sent to England to be set up, were presented by him to the South African Museum.

THE motor-car race from Paris to Marseilles and back, a total distance of 1051 miles, was finished on Saturday last. Twenty-seven of the vehicles which started from Paris on Thursday, September 24, were petroleum carriages, and five were tricycles driven by petroleum motors. There were also four steam carriages. The race was organised by the Automobile Club of France, and was intended entirely as a test of speed. On each day of the ten days the times occupied by the carriages in covering the several stages have been taken, and the winner is the car which travelled the whole distance in the least time. Details of the race have not yet come to hand, but owing to bad roads and obstructions by trees and telegraph-poles blown down by the gale which prevailed early in the contest the journey was not accomplished under the best conditions.

THE first number has been issued, on September 1, of a new natural history periodical, *Il Naturalista Siciliano*, the organ of the newly-formed Society of Sicilian Naturalists, of which Prof. E. Ragusa is the president, and Sig. T. De Stefani the secretary. The Society is intended to meet monthly in Palermo, and once a year in some other city of Sicily. The first number contains articles, in Italian and in French, on Entomology, Malacology, Botany, and Crustacea. The proposed biological station at Palermo, mentioned in our last number, will be under the management of the Society.

AN interesting note on the influence of the male parent in crossing varieties of carnations, appears in the current number (August) of the *Journal* of the Royal Horticultural Society. Evidence in favour of this prepotency is afforded by experiments, carried out by Mr. Martin Smith, on the fertilisation of "Germania." This is a flower of strong individuality, yet, says Mr. Smith, "Germania (yellow) is swamped by the prepotency of the pollen parent in the great majority of cases. I hardly ever get a yellow worth having; but when I do I find them, as a rule, pure reproductions on a most feeble scale of the mother; and I always regard them as products of Germania fertilised by pollen of flowers on the same plant, or from one in the immediate vicinity." On the other hand, when the pollen of Germania was used to fertilise other plants, extremely few yellow flowers resulted from the cross. It seems to be easy enough in a cross for other colours to overcome yellow, but difficult for yellow to be masterful. Mr. Smith adds the interesting fact that when he crossed violent contrasts of colour, such as purple and yellow, or scarlet and yellow, a large proportion of white flowers appeared among the offspring.

BY common agreement the wasp is accepted as emblematical of irritability and petty malignity; but even this much-abused hymenopterous insect plays a beneficial part in the work of nature, as a note in the *Irish Naturalist* testifies. A number of wasps were seen by Mr. R. M. Barrington, of Bray, buzzing about his cows. Closer inspection revealed that they were all busy catching flies, and pouncing with the rapidity of hawks after birds on the flies as they tried to settle or rest on some favourite part of the cow. One white cow drew more wasps than any of the others, because the moment a fly alighted it was seen at once against the skin. When a wasp catches a fly it immediately bites off both wings, sometimes a leg or two, and occasionally the head. Mr. Barrington saw some of the wasps when laden with one fly catch another, without letting go the first, and then fly away with both. There was a constant stream of wasps carrying away flies, probably to feed the larvæ in their nests, and returning again to the cows to catch more. In about twenty minutes Mr. Barrington estimated that between 300 and 400 flies were caught on two cows lying close to where he stood. Perhaps this narrative of good deeds accomplished will lead people to think more leniently of the vices of the wasp.

"ÜBER LUMINESCENZ" is the title of a small pamphlet of 60 pages (Univ. Buchdruckerei von Fr. Junge, Erlangen, 1896), which we have received from the author, Dr. Wilhelm Arnold. In its pages will be found the results of the investigation which the author has carried out with regard to luminescence phenomena, and this may be said to be continuous with the works done by Herren E. Wiedemann and G. C. Schmidt. Dr. Arnold has examined several inorganic bodies, solutions, and organic substances with regard to their different powers of luminescence, and has found a new series of bodies exhibiting this peculiarity excellently. The apparatus used for exciting the substances by means of the kathode rays was similar to that employed by the above-mentioned experimenters. While engaged in this work, Prof. Röntgen's discovery of the X-rays suggested to the author to make investigations on the behaviour of these rays on "feste Lösungen." These results are also brought together, and they deal, further, with the transparency of different substances to these rays, their power over bacteria, and the sensitiveness of the photographic plate. All those at work on this branch of physics will find this pamphlet an earnest endeavour to advance our knowledge in this particular direction; and its value is further increased by the numerous references which the author has inserted in the form of foot-notes.

FROM the St. Petersburg Municipal Laboratory comes an alarming report, by M. M. P. Sacharbekoff, of the milk supplied to the city. Dr. Bitter has endeavoured to establish a microbial standard for milk, by which the bacterial contents of a so-called good sample of milk are limited to 50,000 per cubic centimetre. If this standard is to be accepted, then it is time St. Petersburg looked into its milk supply, for M. Sacharbekoff finds that the maximum microbial contents in a cubic centimetre of its milk reaches no less than 115,300,000! For the sake of comparison the milk microbial maximum of other cities is cited, amongst which we find Munich figuring with 4,000,000 per c.c., Würzburg with 7,535,000, whilst Giessen even surpasses St. Petersburg with a maximum of 169,632,000. The samples of milk were also tested by means of direct inoculation into animals for the presence of pathogenic bacteria. No less than eighty guinea-pigs were used in these inoculations, out of which four succumbed to the tubercle bacillus, three to the staphylococcus *Pyogenes aureus*, two to *B. coli communis*, and five to other pathogenic microbes. But, besides these bacteria, various saprophytes were isolated out, which it was found were able to elaborate in the milk toxic products of a highly deleterious character. The high rate of mortality from diarrhœa, which prevails amongst young children in St. Petersburg up to five years of age, and which amounts to no less than 43 per cent., is, the writer considers, to a large extent attributable to the impure milk supplied to the city. The worst samples were obtained from the milk-women who buy the milk second-hand, and distribute it to their customers. M. Sacharbekoff ends his report by drawing up a number of suggestions, amongst which is advocated a closer control over the milk supply by competent sanitary authorities.

SOME of the results which the Norwegian traveller Sven Hedin has obtained in his journeys to the northern part of the Kwenlung mountains, and towards the east of the town of Khotan, are summed up in *Globus* (Band lxx., No. 13). It seems that between Kerija and Shahyar, Sven Hedin found the ruins of large towns which had been buried in sand, and his calculations suggest that they were entombed by successive sandstorms about 1000 years ago. The discoveries he made were, considering the difficulties to be contended with, extensive. One of the towns he found was over four kilometres long, and consisted of a great number of house ruins; the separate houses were not built of stone, but constructed of wooden pillars, and the walls consisted of plaited reeds covered with mud. These latter were coated with white plaster, on which were painted human figures, horses, dogs and flowers. Small figures, 10–20 cm. high, representing Budda, were also discovered, besides numerous poplars, apricot and plum trees, which once flourished there when the towns were watered by the canal from the river Kerija. It is suggested that the culture of the inhabitants must have been very considerable, for the copies of the drawings on the walls brought back by Sven Hedin show indications of good execution.

THE *Journal of Botany* gives an interesting account of Herr R. Schlechter's botanical explorations in South Africa, which have been much impeded by the drought. He has collected about 1200 species, of which he estimates at least one-tenth to be new.

ANOTHER of the useful "Hand-lists" issued from the Royal Gardens, Kew, has just been received. It is Part ii. of the list devoted to trees and shrubs grown in the Arboretum, and comprises *Gamopetalæ* to *Monocotyledons.*

A NEW edition (the fourth) of "The Microtomist's Vade Mecum," by Mr. A. B. Lee, has been published by Messrs. J. and A. Churchill. The work is a handbook of the methods of microscopic anatomy, and it constitutes a most complete account of the operations of histological technique. To all who are engaged in histological studies the volume is invaluable.

THE Society for the Protection of Birds is very enthusiastic in the prosecution of the good work it was founded to perform, and has already met with much encouragement in its labours. Its latest, but by no means least important, development is the commencement of a series of leaflets, entitled the "Educational Series," under the editorship of Mr. H. E. Dresser, which aims at supplying to the public, in a not too technical form, authoritative information respecting the seven following points:—Name [of bird], general description, where, when and in what numbers found, food, characteristics, protection, and remarks. The pioneers of the series are "Owls," by Mr. Montagu Sharpe, and "Woodpeckers," by Sir Herbert Maxwell, Bart. We wish for the publications and their successors a very wide circulation, as we feel sure their perusal will remove from the minds of many farmers, gamekeepers, and others, a great deal of misapprehension at present lurking there.

THE additions to the Zoological Society's Gardens during the past week include a Pig-tailed Monkey (*Macacus nemestrinus*) from Java, a Bonnet Monkey (*Macacus sinicus*) from India, presented by Mr. Edward Good; a Patas Monkey (*Cercopithecus patas*) from West Africa, presented by Mr. W. S. Gilbert; a Red-fronted Lemur (*Lemur rufifrons*) from Madagascar, a Serval (*Felis serval*), two Side-striped Jackals (*Canis lateralis*), a Pale Genet (*Genetta senegalensis*), a Vociferous Sea Eagle (*Haliætus vocifer*), a —— Hawk (*Accipiter* sp.?) from British Central Africa, presented by Sir Harry Johnston, K.C.B.; a Black Francolin (*Francolinus vulgaris*) from the Syrian Coast, presented by Admiral Sir M. Culme-Seymour, Bart., K.C.B.; a Kite (*Milvus ictinus*), British, presented by Mr. E. A. Wilson; a Hedgehog (*Erinaceus* sp. ?) from the Erkomit Hills, Eastern Soudan, presented by Mr. J. U. Coxen; a King Parrakeet (*Aprosmictus scapulatus*) from Australia, presented by Mrs. Lyons; three Chameleons (*Chamæleon vulgaris*) from North Africa, presented by Mr. E. Palmer; two Moorish Tortoises (*Testudo mauritanica*) from North Africa, presented by Mr. A. J. Aitchinson; two Black Tortoises (*Testudo carbonaria*) from Granada, W.I., presented by Mr. Thomas Ottway; seven Pratincoles (*Glareola pratincola*), European, deposited; a Levaillant's Amazon (*Chrysotis levaillanti*) from Mexico, a Yarrell's Curassow (*Crax carunculata*) from South-east Brazil, a long-tailed Glossy Starling (*Lamptornis æneus*) from West Africa, purchased; an Asiatic Wild Ass (*Equus onager*), a Great Kangaroo (*Macropus giganteus*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

COMET GIACOBINI.—Our previous ephemeris of this comet was inclusive up to October 1. A Centralstelle Circular gives us a continuation of this ephemeris, based on new elements (September 5, 8, 11) calculated by Dr. H. Kreutz.

1896.	R.A.	Decl.	log Δ	B.
	h. m. s.	° ′		
Oct. ... 5·5 ...	18 22 35	−12 2·5	0·1651	0·9
9·5 ...	33 42	12 28·5	0·1706	0·9
13·5 ...	45 8	12 51·4	0·1764	0·9
17·5 ...	56 51	13 10·9	0·1826	0·9

COMET SPERRA.—With regard to the comet, information about which was communicated by a Science Observer Special Circular (No. 113), a Kiel Circular gives us an ephemeris which Prof. Lamp has calculated from new elements based on observations on September 6, 10, 13. Mr. Sperra describes this comet, as he observed it on August 31, as a nebulous object west of Zeta Ursa Major, an interval of an hour and a quarter showing distinct motion. Mr. Brooks, who had had notice of this discovery on September 4, also found the comet. Various new observed positions are given in *Astronomischen Nachrichten* (No. 3379) by several observers.

Prof. Lamp's ephemeris is given below:—

1896.	R.A.	Decl.	log Δ	B.
	h. m. s.	° ′		
Oct. 6·5 ...	16 53 22 ...	+43 59 6 ...	0·2478 ..	0·6
10·5 ...	17 11 36 ...	41 44·7 ...	0·2569 ...	0 6
14·5 ...	17 28 24	39 29 0 ...	0·2671 ...	0·5
18·5 ...	17 43 56 ...	37 14 9 ...	0·2785 ...	0·5

PROF. LUDWIG PHILIPP V. SEIDEL.—The current number of *Astronomischen Nachrichten* contains a short obituary notice, by Prof. Seeliger, of Prof. v. Seidel, who died recently in Munich, after a long illness. He was born in the year 1821 at Zweibrüchen, and studied in the universities of Königsberg, Berlin, and Göttingen, in which he attended the lectures of Bessel, Jacobi, Dirichlet and Gauss, with the two former of whom he became intimately acquainted. Seidel's scientific work was not only restricted to pure mathematics, but also to astronomy. In the former, his researches are well known, and of great importance is his "Note über eine Eigenschaft der Reihen, welche discontinuirliche Functionen darstellen," which contains a beautiful and important conception of regular and irregular convergence in the theory of series. He took no small part in Jacobi's well-known work on the secular perturbations of the major planets, in which he undertook the computations of extensive numerical results. Jacobi's proposal of obtaining by successive approximations the numerical solution of a system of normal equations of several unknowns, was further worked out in detail and extended by Seidel himself. No less interesting are the optical works Seidel completed in conjunction with Herrn C. A. Steinheil; among these may be mentioned his numerous dioptical investigations, which marked a distinct progress in this direction. These and other researches were of great importance in connection with Steinheil's photometric investigations.

THE BRITISH ASSOCIATION.

SECTION I.

PHYSIOLOGY.

OPENING ADDRESS BY W. H. GASKELL, M.D., LL.D., F.R.S., PRESIDENT OF THE SECTION.

WHEN I received the honour of an invitation to preside at the Physiological Section of the British Association, my thoughts naturally turned to the subject of the Presidential Address, and it seemed to me that the traditions of the British Association, as well as the fact that a Physiological Section was a comparatively new thing, both pointed to the choice of a subject of general biological interest rather than a special physiological topic; and I was the more encouraged to choose such a subject because I look upon the growing separation of physiology from morphology as a serious evil, and detrimental to both scientific subjects. I was further encouraged to do so by the thought that, after all, a large amount of the work done in physiological laboratories is anatomical—either minute anatomy or topographical anatomy, such as the tracing out of the course of nerve-fibre tracts in the central and peripheral nervous system by physiological methods. Such methods require to be supplemented by the morphological method of inquiry. If we can trace up step by step the increasing complexity of the vertebrate central nervous system; if we can unravel its complex nature, and determine the original simpler paths of its conducting fibres, and the original constitution of the special nerve centres, then it is clear that the method of comparative anatomy would be of immense assistance to the study of the physiology of the central nervous system of the higher vertebrates. So also with numbers of other physiological problems, such as, for instance, the question whether all muscular substances are supplied with inhibitory as well as motor nerves; to which is closely allied the question of the nature of the mechanism by which antagonistic muscles work harmoniously together. Such questions receive their explanation in the researches of Biedermann on the nerves of the opening and closing muscles of the claw of the crayfish, as soon as it has been shown that a genetic relationship exists between the nervous system and muscles of the crayfish and those of the vertebrate.

Take another question of great interest in the present day, viz. the function of such ductless glands as the thyroid and the pituitary glands. The explanation of such function must depend upon the original function of these glands, and cannot, therefore, be satisfactory until it has been shown by the study of comparative anatomy how these glands have arisen. The nature of the leucocytes of the blood and lymph spaces, the chemical problems involved in the assigning of cartilage into its proper group of mucin compounds, and a number of other questions of physiological chemistry, will all advance a step nearer solution as soon as we definitely know from what group of invertebrates the vertebrate has arisen.

I have therefore determined to choose as the subject of my address "The Origin of Vertebrates," feeling sure that the evidence which has appealed to me as a physiologist will be of interest to the Physiological Section; while at the same time, as I have invited also the Sections of Zoology and Anthropology to be present, I request that this address may be considered as opening a discussion on the subject of the origin of vertebrates. I do not desire to speak *ex cathedrâ*, and to suppress discussion, but, on the contrary, I desire to have the matter threshed out to its uttermost limit, so that if I am labouring under a delusion the nature of that delusion may be clearly pointed out to me.

The central pivot on which the whole of my theory turns is the central nervous system, especially the brain region. There is the *ego* of each animal; there is the master-organ, to which all the other parts of the body are subservient. It is to my mind inconceivable to imagine any upward evolution to be associated with a degradation of the brain portion of the nervous system. The striking factor of the ascent within the vertebrate phylum from the lowest fish to man is the steady increase of the size of the central nervous system, especially of the brain region. However much other parts may suffer change or degradation, the brain remains intact, steadily increasing in power and complexity. If we turn to the invertebrate kingdom, we find the same necessary law: when the metamorphosis of an insect takes place, when the larval organs are broken up by a process of histolysis, and new ones formed, the central nervous system remains essentially intact, and the